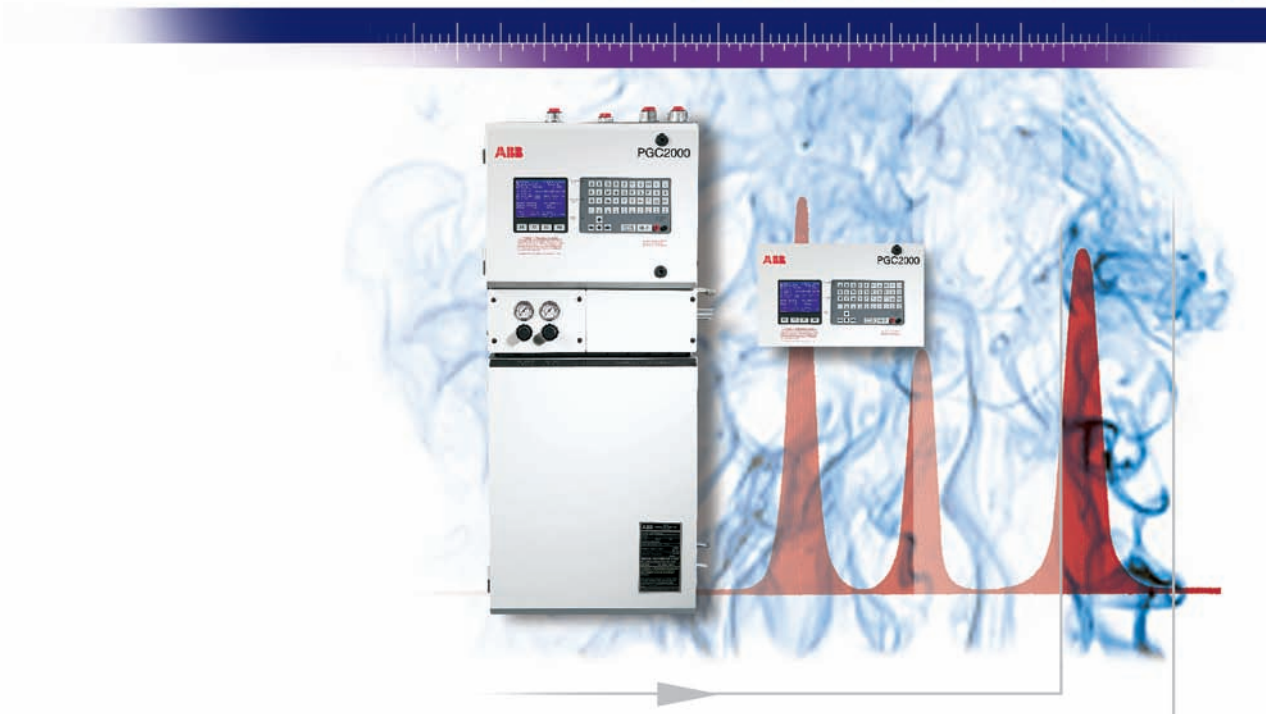
Process Gas Chromatograph

PGC2000 Series



PGC2000 Series

- PGC2002 Process Distillation
- PGC2003 PNA
- PGC2005 Temperature Programmed GC
- PGC2007 Fuel Sulfur Analyzer
- PGC2009 Fast TP GC

PGC2000 Series – Process Gas Chromatograph

A Gas Chromatograph – Built On A Foundation Of Leadership

ABB manufactured and sold the first on-line process gas chromatograph in 1957. In the decades since, ABB has continually advanced its process GC technology leadership. Now, ABB is leading the way into the 21st Century with the PGC2000 series of process gas chromatographs.

The PGC2000 is the second generation of Vista on-line process GC's. ABB PGC analyzers have set a new standard for ease of use, quality and reliability. The PGC2000 has also raised process GC technical standards, with more compact size, improved serviceability, superior connectivity and digital analytical control.

A More Compact Design For Greater Space Savings

The PGC2000 has a significantly smaller footprint than competitive designs. The analyzer is only 19.5 inches (496 mm) wide. For most configurations, there are no components, tubing or wiring on the left side. That saves even more space in installation. Analyzer-to-analyzer spacing has been reduced by over 19 inches (482 mm), significantly reducing the required shelter space for multi-analyzer systems.

Improved Serviceability

The PGC2000 uses an integrated backplane that eliminates wiring harnesses and terminal strips. All subsystems such as temperature controllers, detector amplifiers, sensors, and options are assigned specific, clearly labeled plug locations. This self-documenting concept greatly improves serviceability and upgrade ability. It also improves quality and reliability by eliminating loose wiring connections and allowing components and modules to be tested before system installation.

Process Gas Chromatograph

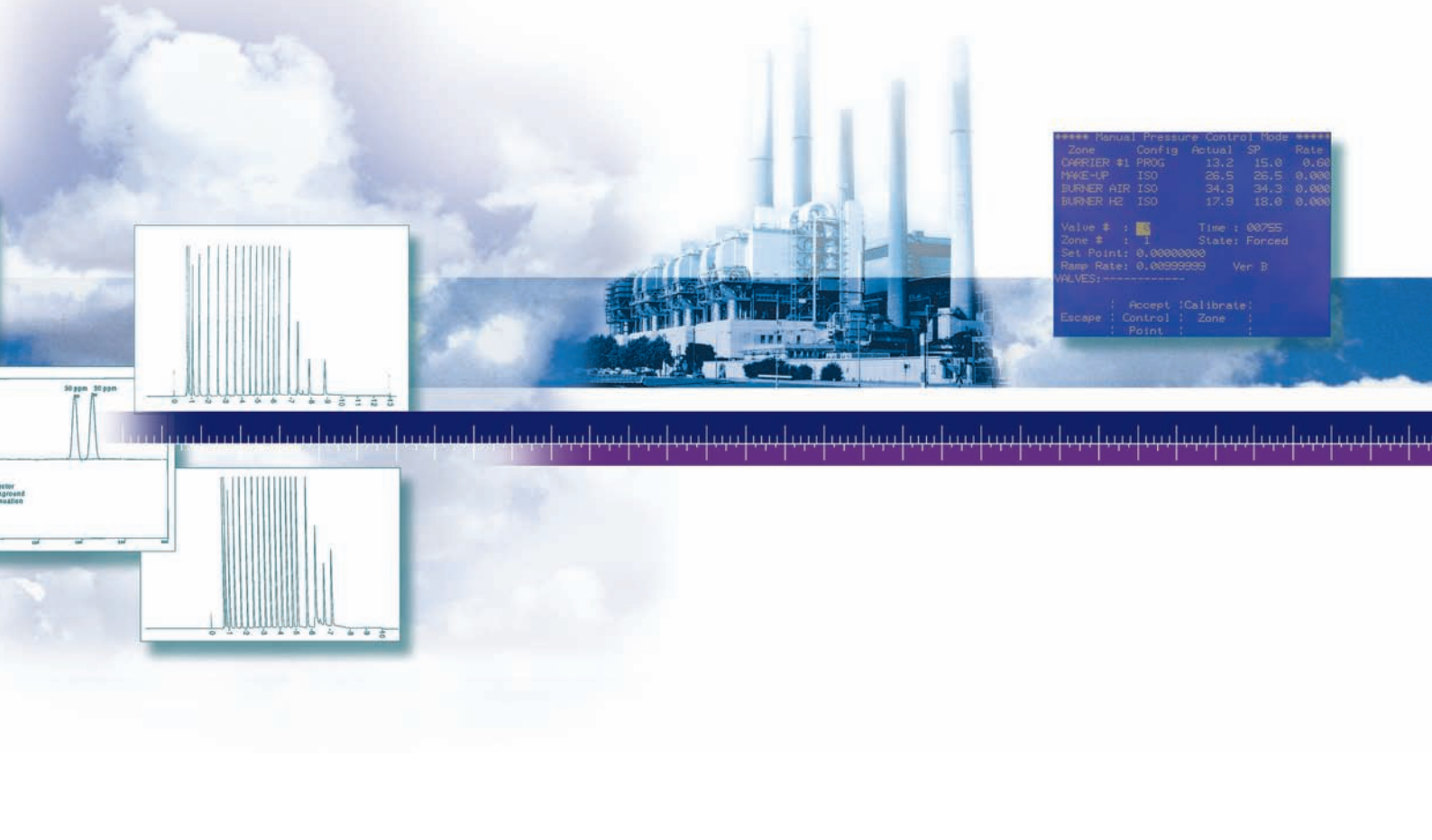
Superior VistaNET$^{2.0}$ Connectivity

Integration of the PGC2000 into the process control loop is readily achieved with the ABB VistaNET2.0 Integrated Process Analyzer Network Architecture. VistaNET$^{2.0}$ is an economical single-wire solution that enables seamless connectivity to existing Ethernet-based systems.

With VistaNET$^{2.0}$ all process analytical equipment can share the same network for data exchange, with control systems and higher-level processes, in a true distributed network architecture. VistaNET$^{2.0}$ provides plant engineers, maintenance engineers and other data users with a common platform for data collection, presentation and analysis.

Digital Analytical Control Functions

The PGC2000 offers standard digital temperature and optional digital pressure control. With digital controls, temperature and pressure can be set directly at the analyzer keypad or remotely via VistaNET$^{2.0}$ Digital control reproduces temperature and pressure settings far more precisely than analog temperature controls or mechanical pressure regulators.
The optional electronic pressure control improves chromatography by providing better resolution, exceptional retention time stability, and faster analysis time. Ambient temperature, carrier supply, and barometric pressure effects are reduced, greatly improving analyzer stability. Analytical flows can vary for different methods within the same analyzer, enabling a wider range of on-line and at-line applications. Carrier gas consumption can be minimized by turning carrier flow off when not needed and by reducing or eliminating split flows and flows to vent during portions of the analysis.



Ease Of Operation

The PGC2000 Series offers a fast learning curve with minimal training. Analyzers can be placed on-line and kept on-line with a minimum amount of time spent learning the programming. The PGC2000's menu-driven interface, front panel keypad and 5.6 inch (142 mm) diagonal graphics display allow users to easily change, modify or edit all analysis parameters. All front panel functions are also available at any network PC via VistaNET[2.0] This allows operating personnel to concentrate on the analytical aspects of the application instead of electronic/programming concerns.

A World Class Analyzer Meets World Standards

The PGC2000 Series is designed from the ground up to meet current and emerging international standards such as CE, ATEX, CSA, and NEC/NRTL. In most cases, the standard configuration meets all required international standards, minimizing analyzer variants and assuring consistent performance and safety.

Real-Time VistaBASIC

Flexibility and integration are critical to a process chromatograph. ABB's VistaBASIC language provides additional flexibility in meeting customer application requirements. Real-time VistaBASIC allows the chromatographic controller to be used in a supervisory capacity to monitor sample systems and interface with other devices in more complex remote-controlled systems.

VistaBASIC virtually eliminates the need for a PLC in complex discrete sampling systems. VistaBASIC provides interanalyzer communications, where measurement values from one analyzer are used in calculations on another, via VistaNET[2.0]

While VistaBASIC can be used for these more sophisticated analyzer solutions, BASIC programming skills are not required for typical analyzer applications. Common uses for VistaBASIC include calculated values derived from measured component valves, such as heating value (BTU). VistaBASIC provides the tools for custom extensions to the chromatograph controller's capabilities and provides full access to the extensive I/O of the Vista controller.

Specialized PGC2000 Series

In addition to the standard PGC2000, ABB Analytical offers several specialty process gas chromatographs:

- **PGC2002**
  Process Distillation
- **PGC2003**
  PNA (Paraffins, Naphthenes and Aromatics)
- **PGC2005**
  Temperature Programmed GC
- **PGC2007**
  Fuel Sulfur Analyzer
- **PGC2009**
  Fast Temperature Programmed GC for Simulated Distillation

Analytical Oven

Analytical Oven

- Precise air bath oven temperature control
- Efficient oven layout
- Valves oriented for easy access
- PFA Teflon® replaces SS tubing for air lines
- Liquid and vapor injection valves
- Detectors appropriate for the applications:
  - Flame Ionization Detector
  - Thermal Conductivity Detector
  - Flame Photometric Detector
  - Packed, micro-packed and capillary columns

Liquid Sample Valve

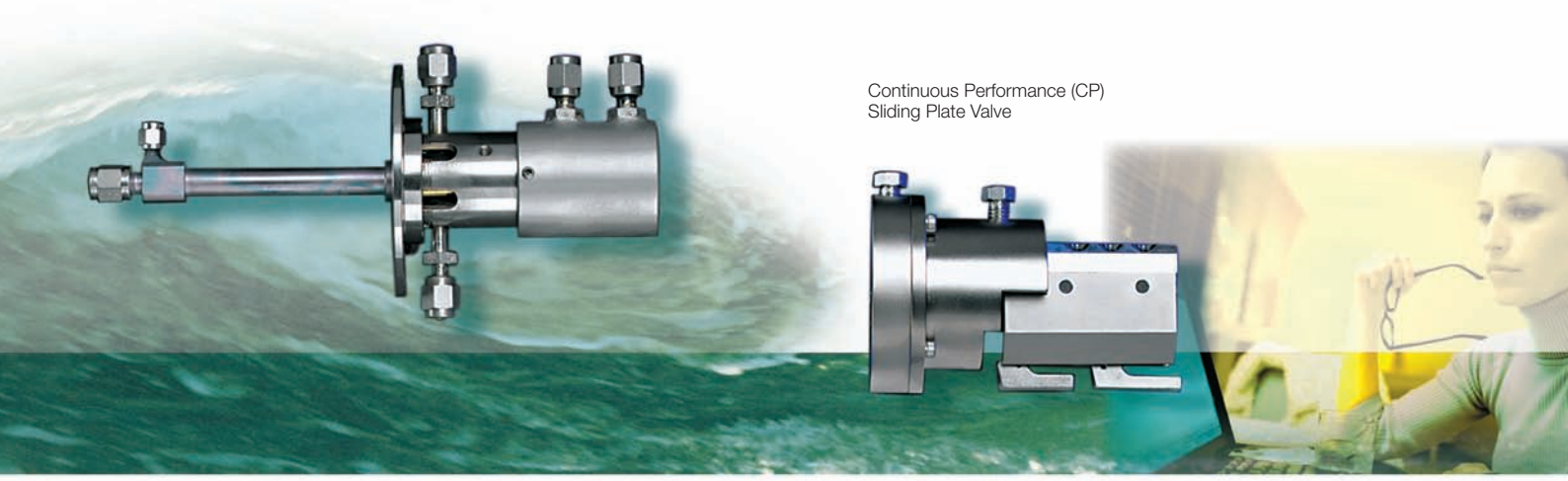
The field proven liquid sample valve, with wear compensating seals, is a one piece design with vaporizer and metal surface deactivation to yield longer life. Sample pressures up to 435 PSI (197.28 KPI) and temperatures up to 200 °C (392 °F).

Continuous Performance (CP) Sliding Plate Valve

Accommodates packed or capillary columns. Design includes automatic wear compensation and slider tension loading. Sample pressures up to 150 PSI (68.03 KPI) and temperatures up to 180 °C (356 °F).

Liquid Sample Valve

Continuous Performance (CP)
Sliding Plate Valve

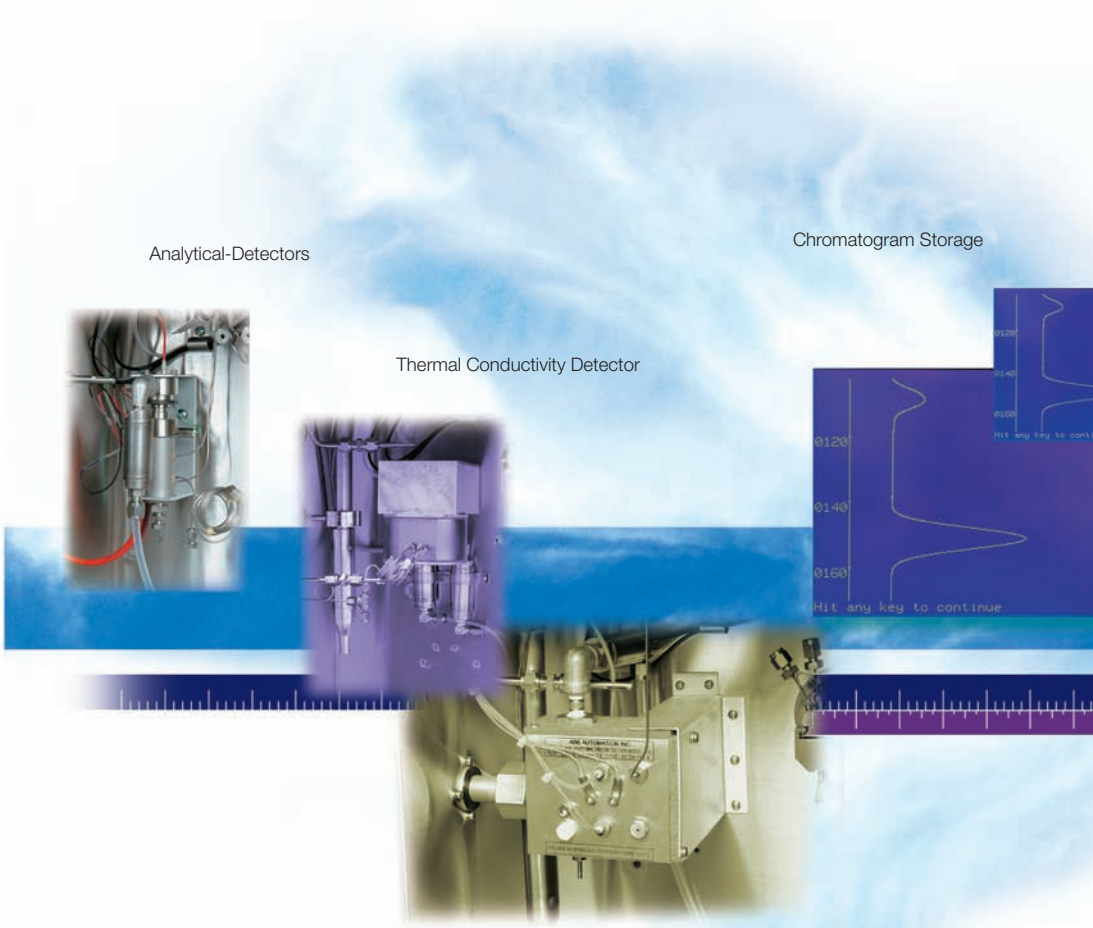


Analytical Detectors

The ABB Flame Ionization Detector provides extreme sensitivity for ppm hydrocarbons and is individually heated as required by the application.

The ABB Thermal Conductivity Detector is suited for general purpose analytical measurements, normally in the percent ranges, but may be applied to measurements down to hundreds of ppm in some applications. It may also be individually heated when required by the application.

The Flame Photometric Detector is the third ABB designed detector available. It is selective for analysis of sulphur levels down to very low ppm.



Technical And Performance Features

The process gas chromatograph PGC2000 Series offers a broad range of features. Some of these features are outlined here.

Chromatogram Storage

- Analysis may be saved on calibration, benchmark, typical, alarm, last analysis and current analysis
- Up to one hour of chromatograph storage is available
- The user can save raw chromatograms manually or automatically
- The operator can view the chromatogram at the Model 2000 controller or on a PC connected to VistaNET[2.0]

The PGC2000 Controller Front Panel Keyboard/LCD

- 5.6 inch (142 mm) diagonal LCD graphic user interface
- 320 x 240 dot monochrome (white on blue screen)
- 50-key touch pad
- Plain language menus

Digital Temperature And Pressure Controllers

- Temperature Standard – EPC Optional
- Allow full visibility of all analyzer temperature and pressure settings
- Up to five independently-controlled zones for temperature and pressure
- Zones can control external sample system heaters at user's option
- Temperature and pressure setpoints may be varied as dictated by the analytical methods
- Reproduce temperature and pressure settings more precisely than analog controllers or mechanical regulators

Detector Signals

- Design integrates two detector signals simultaneously in any combination – TCD/FID, TCD/FPD, FID/FID, etc.
- Detector signals digitized using Voltage to Frequency conversion
- Converter integrates detector signal, counting a pulse 32 times per second
- Reading represents continuous integration of the signal over previous 1/32 of a second.
- Eliminates errors associated with finite sampling rates

System Maintenance

- Written alarm messages
- Integral diagnostics
- Help menus
- Integral chromatogram display
- Resume On Power Interrupt feature

SQC Support

access to …

- peak area
- baseline noise
- analyzer status
- other data
- printer for hard copy reports

Analog Outputs

Analog trend outputs for component concentrations …

- 32 each, 4-20 ma isolated outputs
- 96 each, 0-5 or 1-5 volt outputs
- 0-10 volt recorder output

Base Inputs

- 12 each, discrete stream select inputs or additional VistaBASIC inputs
- 4 each, discrete VistaBASIC inputs
- Up to 8 each, dry contact sensor inputs
- Remote start
- 2 each, 12-bit differential VistaBASIC analog inputs

Serial Outputs

- 1 each, RS232 printer, write only
- DCS outputs through the VistaNET$^{2.0}$ Gateway

Digital Outputs

- Up to 32 each, remote streams (10 each, standard)
- Up to 96 each, concentration alarms

Other Support Functions

Program supports up to …

- 8 each, analyzer oven valves
- 8 each, methods
- 50 components

Applications Engineering

ABB applications engineers – pioneers and innovators – are world-recognized leaders in chromatographic applications technology. Our application experience, coupled with the power of the PGC2000 Series, enables ABB to successfully apply the chromatographic technique to a broad range of process applications and achieve targeted analysis times.

To discuss your specific application and receive complete information on the PGC2000 Series, please contact your ABB Representative.

Worldwide Service and Support

ABB supports the PGC2000 Series and all of its analyzer products through a specialized business unit dedicated to service and support. ABB Customer Service and Support (CSS) provides installation and start-up services, commissioning and training, maintenance services, reconditioning, repair and replacement parts, and other specialized services designed to reduce the customer's cost of ownership.

Maintenance services are available on an as-needed basis or through scheduled maintenance agreements. Training services are available for virtually every aspect of operating and maintaining the PGC2000. Training may be arranged on-site or at any of our training centers. With manufacturing facilities, sales and distribution units located worldwide, ABB Customer Service and Support is available wherever you need it.

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Specifications subject to change without notice.

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